

REMARKS

Applicants acknowledge with appreciation the Examiner's indication that claims 5 and 11-14 would be allowable if rewritten in independent form. Claims 5, 11, and 12 have been rewritten as independent claims 18, 19, and 20. Claims 13-14 have been rewritten as dependent claims 21 and 22.

Applicants have changed the title of the invention to be more indicative of the invention to which the claims are directed.

The Examiner has rejected claims 1, 2, 6-8, 10, and 15-17 as anticipated by Forster (U.S. Patent No. 4,449,444). Claims 1, 16, and 17 are in independent form.

Claims 1, 16, and 17 are patentable over Forster.

Claim 1, as amended, recites "a plurality of *non-rotating* piston cylinders arranged radially about the actuating mechanism..." (emphasis added). Forster does not describe or suggest at least the claimed non-rotating piston cylinders. Rather, Forster describes cylindrical holes 21 that rotate with a cylindrical drum 4.

Therefore, applicants submit that claim 1, and the claims dependent therefrom are patentable over Forster.

Claim 16, as amended, relates to a metering pump including a transition arm coupled to a stationary support and a rotary member, and a plurality of piston cylinders arranged radially about the transition arm and coupled to the transition arm. At least part of the transition arm is centrally located between the piston cylinders, and the stationary support is positioned such that an axis of rotation of the rotary member passes through the stationary support.

Forster does not describe or suggest at least the claimed transition arm or the claimed stationary support. The Examiner has equated the claimed transition arm with adjustable pins 42 or 49 and the claimed stationary support with operating cylinder 45, covers 46, and operating cylinder 47. Adjustable pins 42 or 49, however, are located adjacent to but not between the cylinders formed by the cylindrical holes 21 in the rotating drum 4, and operating cylinder 45, covers 46, and operating cylinder 47 are not positioned such that an axis of rotation of the rotary member passes through them.

Therefore, applicants submit that claim 16 is patentable over Forster.

Claim 17, as amended, relates to a method of metering fluids including “independently adjusting stroke of *one piston* of a plurality of pistons to adjust the volume of metered fluid...” (emphasis added). Forster does not describe or suggest independently adjusting stroke of one piston. Rather, Forster describes a tapered washer 34 that simultaneously adjusts the stroke of multiple pistons 19 and a tapered washer 37 that simultaneously adjusts the stroke of multiple pistons 25.

Therefore, applicants submit that claim 17 is patentable over Forster.

The Examiner has rejected claims 1-3, 8, and 9 as anticipated by Tsai (U.S. Patent No. 5,049,799). Claim 1 is in independent form.

Claim 1, as amended, recites “a plurality of *non-rotating* piston cylinders arranged radially about the actuating mechanism” (emphasis added). Tsai does not describe or suggest the recited plurality of *non-rotating* piston cylinders. Rather, Tsai describes a single *non-rotating* piston cylinder that houses a control piston 36. The plurality of cylinder bores in drum 20 that house pistons 18 of Tsai rotate with drum 20.

Therefore, applicants submit that claim 1, and claims dependent therefrom are patentable over Tsai.

New claim 31 corresponds in part to claim 9 rewritten in independent form. Regarding claim 9, the Examiner’s rejection states that in Tsai “at least 4 cylinders are shown in Figure 1, each having a working volume that differs from the other cylinders.” However, contrary to the Examiner’s assertion, Tsai does not describe or suggest that each of the cylinders of Fig. 1 has a working volume that differs from the other cylinders. Figure 1 of Tsai depicts two longitudinal bores in the rotating cylinder block 20 that each receive a piston 18. There is no description or suggestion in Tsai to support the proposition that the working volumes of the bores differ. The depiction of a piston 18 and a cross-section of a piston 18 in the rotating drum 20 of Figure 1 does not represent that the longitudinal bores have different working volumes. Therefore, claim 31 is patentable over Tsai.

New claims 23, 27-30, and 32-33 are patentable over Forster and Tsai. In particular, neither reference describes or suggests at least the claimed “actuating mechanism...wherein at least part of the actuating mechanism is located between the piston cylinders” (claim 23), “a centrally located actuating mechanism including a transition arm coupled to a stationary support

and a rotary member... wherein in at least one operating configuration the axis of rotation of the rotary member and the longitudinal axis of at least one piston are parallel” (claim 27), “actuating mechanism... wherein the actuating mechanism comprises a transition arm coupled to a stationary support by a U-joint” (claim 28), “a plurality of fluid-pumping piston cylinders..., a first of the cylinders having a working volume that differs from a second of the cylinders, wherein the first cylinder is spaced from the actuating mechanism a distance that differs from a spacing of the second cylinder from the actuating mechanism” (claim 29), “an adjustment mechanism configured to independently vary the spacing of one piston cylinder of the plurality of piston cylinders from the actuating mechanism to independently adjust the stroke of a piston in the one piston cylinder” (claim 30), “adjusting the stroke of each cylinder to finely adjust the mix percentage of the plurality of fluids in the mixture” (claim 32), and “an adjustment mechanism configured to adjust the stroke of each piston in each cylinder to finely adjust the mix percentage of each fluid in the mixture” (claim 33).